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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/085,243	02/28/2002	Marcos N. Novaes	POU998019US2	1652

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EXAMINER
JEAN GILLES, JUDE

ART UNIT	PAPER NUMBER
2143	

DATE MAILED: 04/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 January 2006*.

2a)☒ This action is **FINAL.** 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11* is/are pending in the application.

　4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 February 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

　Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

　Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

　a)☐ All　b)☐ Some * c)☐ None of:

　　1.☐ Certified copies of the priority documents have been received.

　　2.☐ Certified copies of the priority documents have been received in Application No. _____.

　　3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

　* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

This Action is in regards to the Reply received on 01/13/2006.

Response to Amendment

1.   This action is responsive to the application filed on 01/13/2006. Claims 1, 2, 5, 6, 9, and 10 were amended. No new claims are added. Claims 1-11 are pending. Claims 1-11 represent a method and apparatus for a "dynamic multicast routing facility for a distributed computing environment."

Response to Arguments

2.   Applicant's arguments with respect to claims 1, 5, 9, and 10 have been carefully considered, but are not deemed fully persuasive. Applicant's arguments are deemed moot in view of the following new ground of rejection as explained here below, necessitated by Applicant substantial amendment (i.e., a method wherein a computung node functions as multicast routing node and that failure of the computing node comprises failure of group leader node) to the claims which significantly affected the scope thereof.

The dependent claims stand rejected as articulated in the Previous Office Action and all objections not addressed in Applicant's response are herein reiterated.

In response to Applicant's arguments, 37 CFR § 1.11(c) requires applicant to "clearly point out the patentable novelty which he or she thinks the claims present in

view of the state of the art disclosed by the references cited or the objections made. He

or she must show the amendments avoid such references or objections."

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described
> as set forth in section 102 of this title, if the differences between the subject matter sought to
> be patented and the prior art are such that the subject matter as a whole would have been
> obvious at the time the invention was made to a person having ordinary skill in the art to which
> said subject matter pertains. Patentability shall not be negatived by the manner in which the
> invention was made.

4. **Claims 1, 5, 9, 10 and 11** are rejected under 35 U.S.C. 102(e) as being anticipated

by Latif et al (Latif), Patent No. 6,393,483 B1, in view of Chen et al (Chen) U.S. Patent

No. 5,831,975.

Regarding **claim 1**, Latif discloses a processing method for a distributed

computing environment having multiple networks of computing nodes employing

multicast messaging, each network having at least one computing node, at least one

computing node of said multiple networks of computing nodes functioning as a multicast

routing node (fig. 2; column 5, lines 29-67), said method comprising:

automatically responding to a failure of a computing node functioning as

multicast routing node of said at least one computing node functioning as said multicast

routing node to reassign said multicast routing function (column 5, lines 10-28); and

wherein said automatically responding comprises dynamically reconfiguring said

distributed computing environment to replace each failed multicast routing node of said

at least one multicast routing node with another computing node of said multiple

networks of computing nodes to maintain multicast message reachability to all

functional computing nodes of said distributed computing environment (column 5, lines

10-67; column 7, lines 1-55; column 11, lines 21-45).

Applicants argued that Latif discloses failing ports instead of failing nodes and

that Latif does not teach a multicast routing functionality with multicast routing nodes in

a distributed environment to maintain multicast message reachability".

In the same field of endeavor, Chen discloses a method in which ". ... The

scheme is highly scaleable to large networks because routers have to maintain only

one tree per multicast group. The method supports dynamic membership to a

multicast group, in that, nodes can join or leave the multicast group during the course

of the multicast. Multiple senders to the multicast group are also supported, which

enables realization of a true multipoint-to-multipoint connection. In addition, the

multicast tree can be dynamically changed to reflect changes in the node and link

states [see Chen; column 7, lines 53-63].

Accordingly, it would have been obvious to one of ordinary skill in the networking

art at the time the invention was made to have incorporated Lim's teachings of using a

group leader in the reassignment process, with the teachings of Latif, for the purpose

of "*providing increased load balancing transmit throughput to networks...* "as stated by

Latif in lines 30-37 of column 2. Chen also provides motivation to combine stating "to

develop a highly scaleable scheme for multicasting in a hierarchical framework which is

also efficient with respect to a combination of factors like bandwidth consumption and

delay, while guaranteeing some quality-of-service (QoS) for each of the connections"

By this rationale, **claim 1** is rejected.

Regarding **claim 2**, the combination Latif-Chen teaches the invention

substantially as claimed. Latif fully discloses the processing method of claim 1 and

further teaches the processing method of claim 1, wherein said at least one computing

node functioning as said multicast routing node comprises multiple computing nodes

functioning as multiple multicast routing nodes (see Latif; column 5, lines 10-67; column

7, lines 1-55; column 11, lines 21-45); said distributed computing environment

comprising a plurality of groups of computing nodes, each group comprising one

network of said multiple networks, and wherein each computing node functioning as

multicast routing node comprises a group leader for multicast routing of a respective

group of computing nodes, each group leader being coupled via a virtual interface to at

least one other group leader of a group of computing nodes of the distributed computing

environment, and wherein said failure of the computing node comprises failure of a

group leader node, and automatically responding to said failure comprises automatically

selecting a new group leader from functioning computing nodes of the respective group

of computing nodes having said group leader failure (see Chen; column 8, lines 16-57).

Regarding **claim 3**, the combination Latif-Chen discloses the processing

method of claim 2, wherein said dynamically reconfiguring comprises

establishing a virtual interface from said new group leader to at least one other

group leader within the distributed computing environment, said virtual interface

comprising a multicast messaging tunnel between said group leaders, said

multicast messaging tunnel being established using an routed daemon (see

Chen; column 8, lines 16-57).

Regarding claim 4, the combination Latif-Chen discloses the processing

method of claim 3, wherein said dynamically reconfiguring comprises ensuring

only one computing node of each group of computing nodes is a group leader

functioning as said multicast routing node for said group of computing nodes,

thereby avoiding redundancy in routing of multicast messages between any two

networks of computing nodes (see Chen; column 8, lines 16-57).

Regarding **claim 5**, the combination Latif-Chen discloses a processing system

for a distributed computing environment, said processing system comprising: multiple

networks of computing nodes within the distributed computing environment, said

multiple networks of computing nodes employing multicast messaging, with each

network having at least one computing node, and at least one computing node of the

multiple networks of computing nodes functioning as a multicast routing node (see Latif;

fig. 2; column 5, lines 10-67; column 6, lines 1-47);

means for automatically responding to a failure of a computing node functioning

as multicast routing node of said at least one computing node functioning as said

multicast routing node to reassign said multicast routing function, wherein said means

for automatically responding comprises means for dynamically reconfiguring said

distributed computing environment to replace each failed multicast routing node of said

at least one multicast routing node within another computing node of said multiple

networks of computing nodes to maintain reachability of multicast messages to all

functional computing nodes of said distributed computing environment (see Latif;

column 5, lines 10-67; column 7, lines 1-55; column 11, lines 21-45).

Regarding claim 6, the combination Latif-Chen discloses the system of

claim 5, wherein said at least one computing node functioning as said multicast

routing node comprises multiple computing nodes functioning as multiple

multicast routing nodes and said distributed computing environment comprises a

plurality of groups of computing nodes, each group comprising one network of

said multiple networks, and wherein each computing node functioning as

multicast routing node comprises a group leader for multicast routing of a

respective group of computing nodes, each group leader being coupled via a

virtual interface to at least one other group leader of a group of computing nodes

of the distributed computing environment, and wherein failure of the computing

node comprises failure of a group leader node, and said means for automatically

responding to said failure comprises means for automatically selecting a new

group leader from functioning computing nodes of the respective group of

computing nodes when said failure comprises a group leader failure. (see Chen;

column 7, lines 53-63; column 8, lines 16-57).

Regarding claim 7, the combination Latif-Chen discloses the system of

claim 6, wherein said means for dynamically reconfiguring comprises means for

establishing a virtual interface from said new group leader to at least one other

group leader within the distributed computing environment, said virtual interface

comprising a multicast messaging tunnel between said group leaders, said

multicast messaging tunnel being established using an mrouted daemon [see

Lim; fig. 1a; column 8, lines 39-65].

Regarding claim 8, the combination Latif-Chen discloses the system of claim 7,

wherein said means for dynamically reconfiguring comprises means for ensuring only

one computing node of each group of computing nodes is a group leader functioning as

said multicast routing node for said group of computing nodes, thereby avoiding

redundancy in routing of multicast messages between any two networks of computing

nodes (see Chen; column 7, lines 53-63; column 8, lines 16-57).

Regarding **claim 9**, the combination Latif-Chen discloses a processing system

for a distributed computing environment comprising: multiple networks of computing

nodes within the distributed computing environment, said multiple networks of

computing nodes employing multicast messaging, with each network having at least

one computing node, and at least one computing node of the multiple networks of

computing nodes functioning as a multicast routing node (see Latif; fig. 2; column 5,

lines 10-67; column 6, lines 1-47; see Chen; column 7, lines 53-63; column 8, lines 16-

57);

a processor associated with the distributed computing environment; and

code executable by said processor associated with said distributed computing

environment, said code causing said processor to effect (see Latif; fig. 11; item 1116;

column 16, lines 19-61; see Chen; column 7, lines 53-63; column 8, lines 16-57):

automatically responding to a failure at said at least one computing node

functioning as said multicast routing node to reassign said multicast routing function ;

and wherein said automatically responding comprises dynamically reconfiguring said

distributed computing environment to replace each failed multicast routing node of said

at least one multicast routing node within another computing node of said multiple

networks of computing nodes to maintain reachability of multicast messages to all

functional computing nodes of said distributed computing environment (see Latif;

column 5, lines 10-67; column 7, lines 1-55; column 11, lines 21-45; (see Chen; column

7, lines 53-63; column 8, lines 16-57).).

Regarding **claim 10**, the combination Latif-Chen discloses an article of

manufacture comprising: a computer program product comprising a computer usable

medium having computer readable program code means therein for maintaining

multicast message reachability within a distributed computing environment having

multiple networks of computing nodes employing multicast messaging, each network

having at least one computing node, and at least one computing node of the multiple

networks of computing nodes functioning as a multicast routing node, said computer

readable program code means in said computer program product comprising:

(i) computer readable program code means for causing a computer to effect

automatically responding to a failure of a computing node functioning as multicast

routing node of said at least one computing node functioning as said multicast routing

node to reassign said multicast routing function (see Latif; column 5, lines 10-67;

column 6, lines 1-47; see Chen; column 7, lines 53-63; column 8, lines 16-57); and

(ii) wherein said computer readable program code means for causing a computer to effect automatically responding comprises computer readable program code means for causing a computer to effect dynamically reconfiguring said distributed computing environment to replace each failed multicast routing node of said at least one multicast routing node with another computing node of said multiple networks of computing nodes to maintain multicast message reachability to all functional computing nodes of said distributed computing environment (see Latif; column 5, lines 10-67; column 7, lines 1-55; column 11, lines 21-45; see Chen; column 7, lines 53-63; column 8, lines 16-57).

Regarding **claim 11**, the combination Latif-Chen discloses the article of manufacture of claim 10, wherein said computer readable program code means for causing a computer to effect dynamically reconfiguring comprises computer readable program code means for causing a computer to effect ensuring only one computing node of each group of computing nodes functions as a multicast routing node for said group of computing nodes, thereby avoiding redundancy in routing of multicast messages between any two networks of computing nodes (see Latif; column 5, lines 10-67; column 7, lines 1-55; column 11, lines 21-45; see Chen; column 7, lines 53-63; column 8, lines 16-57).

Response to Arguments

5.   Applicant's Request for Reconsideration filed on 01/13/2006 has been carefully

considered but is not deemed fully persuasive. However, because there exists the

likelihood of future presentation of this argument, the Examiner thinks that it is prudent

to address Applicants' main points of contention.

A. Applicant submits that the Office Action does not state a prima facie case of

anticipation against claims 1, 5, 9, 10 & 11 by citing Latif. A careful reading of

Latif, and in particular, FIG. 2 & column 5, lines 10-67, column 7, lines 1-55 &

column 11, lines 2 1-45, fails to uncover any discussion in Latif of the

environment recited by Applicant in the claims at issue. Specifically, Applicant

recites a distributed computing environment wherein there are multiple networks

of computing nodes which employ multicast messaging. There is no discussion in

Latif of multicast messaging per se, which as noted above, is a particular type of

messaging protocol distinct from standard internet protocol. Further, Applicant's

claims recite that one of the nodes in at least one of the networks functions as a

multicast routing node. Multicast routing node is a particular node having

multicast routing functionality, as recited in the claims. No multicast routing

functionality is described in Latif, nor in the Office Action. As such, Applicant

respectfully submits that the Office Action fails to state a prima facie case of

anticipation against the claims at issue.

B. Applicant contends that To summarize, Latif does not describe failure of a
node per se within a distributed computing environment, but rather failure of a
port @CI card). As such, Latif cannot teach or suggest a process for
automatically responding to failure of a node, let alone responding by the
dynamic reconfiguration of the distributed computing environment to transfer
multicast routing functionality as recited in Applicant's independent claims 6.

As to "Point A" of the Examiner has reviewed the prior art of record and
concluded that Latif does not in fact anticipate the claimed invention. However,
new prior art of Chen discloses the limitations of point A, as it would have been
obvious for an ordinary skill in the art to successfully combine Latif and Chen to
obtain the benefits of the claimed invention (see Chen; column 7, lines 53-63;
column 8, lines 16-57).
As to point B, see point A above. The prior Art of record Lim has been excluded
from this Office Action as its limitations are inclusive in the new prior art
reference of Chen.

Examiner notes with delight that no new matter has been added and that the new
claims are supported by the application as filed. However, applicant has failed in
presenting claims and drawings that delineate the contours of this invention as
compared to the cited prior art. Applicant has presented argument that overcome the
102(e) anticipation Applicant, but has failed to clearly point out patentable novelty in

view of the state of the art disclosed by the references cited that would overcome the

103(a) rejections applied against the claims, the rejection is therefore sustained.

Conclusion

16.   Applicant's amendment necessitated the new ground(s) of rejection presented in

this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37

CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

than SIX MONTHS from the date of this final action.

13.   Any inquiry concerning this communication or earlier communications from

examiner should be directed to Jude Jean-Gilles whose telephone number is (571) 272-

3914. The examiner can normally be reached on Monday-Thursday and every other

Friday from 8:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, David Wiley, can be reached on (571) 272-3923. The fax phone number for

the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or

proceeding should be directed to the receptionist whose telephone number is (571) 272-

9000.

Jude Jean-Gilles

Patent Examiner

Art Unit 2143

JJG

April 1, 2006

JEFFREY PWU
PRIMARY EXAMINER